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Roundup the Earthworms

Abstract: The experiment that the scientist is conducting is how herbicides may affect the burrowing time of earthworms. To keep people's yard looking free of weeds, many people will use herbicides to get rid of them. The scientist placed the worm in a chamber with diluted herbicides surrounding it for a certain amount of time, then after the time is done, he placed the worm in a cup of soil and timed how long the worm took to completely burrow. This process will be done for 4 different concentrations of the contaminant and the worm will be exposed for 3 different times. Each test should be done to 3 worms.

Introduction: The scientist chose to test Roundup on earthworms because it is a real problem in our environment. Many people use Roundup, and therefore have been exposed to it. Since earthworms have a similar DNA to us, the scientist thought that the way that the earthworms react may reflect on the way people react.

Materials/Methods:

The way that the scientist will start setting up for the experiment is by making different dilutions of Roundup. 4 1 drop of Roundup and 9 drops of water, 1:19, 1:39, and 1:59. Then place the 1:9 Roundup in one piece of filter paper until it is completely soaked. Place that filter paper into the bottom of a solo cup. Have another piece of filter paper prepared that is also completely covered with 1:9 Roundup. Place an earthworm in the cup and cover it with the other filter paper. Once covered with the other filter paper, place another solo cup on top to ensure that the earthworm does not escape. The worm should be exposed in the chamber for 2.5 minutes, and the placed into another solo cup with soil, and time how long it takes for the worm to burrow. Do this again for 5 minutes, and 10 minutes, using a new worm each time. Then repeat this for the 1:19, 1:39, and 1:59 concentrations of Roundup.

Rate	Time Exposed (Minutes)	Burrowing Time (Worm 1) (min)	Burrowing Time (Worm 2) (min)	Burrowing Time (Worm 3) (min)
1:10	2.5	9:57	9:55	8:52
1:10	5	14:49	15:56	16:47
1:10	10	19:42	>20	>20
1:20	2.5	7:32	8:37	4:10
1:20	5	13:51	15:02	14:45
1:20	10	16:22	17:11	9:23
1:40	2.5	5:58	6:39	4:00
1:40	5	9:26	8:40	11:05
1:40	10	14:03	15:19	14.21
1:60	2.5	4:24	4:55	8:44
1:60	5	6:05	6:43	7:57
1:60	10	11:47	12:39	17.23

Results: The basics of the scientists experiment was making different concentrations of the contaminant, putting the worm in it for a certain amount of time, and then timing how long the worm took to burrow. This experiment was important because people need to know how much an earthworm could get affected if it came in contact with weed killer. It is also important because earthworms work in a similar way that humans do, so what happened to the worms might happen to us humans.

Discussion: As you can see from the results, the earthworms burrowing time was affected by the contaminant. Sometimes there would be an outlier in the data, but there was still a trend going on. The fastest burrowing times usually occurred when the worms were exposed for 2.5 minutes, and contaminated by the 1:60 rate of the herbicide, but sometimes that was not the case. The more time and the higher concentration that the worms were exposed to, the longer it took for them to burrow. It was likely the glyphosate that caused the earthworms to act so abnormally. It slowed down the earthworm's nervous system and the worm was unable to burrow the way it typically would.